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*TESSMANNIANTHUS*,  
AN ARBORESCENT GENUS  
OF MELASTOMATACEAE  
NEW TO PANAMA<sup>1</sup>

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ABSTRACT

Recent collecting activity in montane cloud forests of western and central Panama has led to the discovery of two new species of *Tessmannianthus*, a little-known genus of trees previously recorded from Colombia, Ecuador, and Peru. *Tessmannianthus carinatus* and *T. gordonii* are described, illustrated, compared, and contrasted with similar species. A key to the new taxa and a synoptic history of the genus are also provided.

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In a paper describing new Peruvian flowering plants collected by the late Günther Tessmann, Markgraf (1927) proposed the new genus and species *Tessmannianthus heterostemon*, to accommodate one of the tallest known trees (30–45 m) among neotropical Melastomataceae. Markgraf's circumscription of *Tessmannianthus* emphasized its unique androecial characters. The connectives on the larger set of dimorphic stamens are modified dorsally into biauriculate, ventrally upturned appendages. The smaller anther sacs are longitudinally bifurcate distally and have connectives that are prolonged dorsally at the base into bilobed or deflexed, bifid appendages. These characters, to-

gether with the pentamerous flowers, trilocular capsular fruits, and prevailingly lepidote indument, define *Tessmannianthus* as a natural alliance worthy of generic rank.

For nearly fifty years *Tessmannianthus* was thought to be a monotypic genus. Wurdack (1975) described *T. cenepensis* and transferred the enigmatic *Miconia calcarata* Gleason to *Tessmannianthus*, enlarging the genus to three species and extending its range from Peru northward to Colombia.

Because of its arborescent habit, rainy season flowering, and evidently limited number of individuals in any one population, *Tessmannianthus* has

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escaped the attention of most collectors. Each of the species is known from fewer than six collections, and open flowers of *T. cenepensis* and mature seeds of *T. heterostemon* remain unknown.

The discriminating collecting efforts of Gordon McPherson in Panama have yielded the first collections of the two new species described here. Among the six merianoid genera of Melastomataceae now known from Panama (Gleason, 1958; D'Arcy, 1987), *Tessmannianthus* is likely to be confused only with *Graffenrieda*. The latter is distinguished by a calyptriform or irregularly rupturing calyx, dorsally arcuate stamens, and anther connectives modified into acute dorso-basal spurs. The Panamanian species of *Tessmannianthus* do not appear to be closely related to one another. They are, nevertheless, readily separated from all other Central American melastomes by the following characters: the small (4–7.5 × 2–6 mm) clawed petals are retrorsely erose-ciliolate; the larger ventrally arcuate anthers open by a pair of ventrally inclined confluent pores; and each of the bifurcate anther sacs in the smaller stamens opens by a dorsally inclined pore.

#### KEY TO *TESSMANNIANTHUS* IN PANAMA

- 1a. Upper leaf surfaces sulcate, the elevated nerves on lower leaf surfaces moderately covered with a caducous mixture of shaggy-dendritic (pinoid) and lepidote hairs; hypanthia (at anthesis) 7–8 mm long to the torus; calyx lobes beset with a carinate keel that forms an incurved clawlike apical tooth; petals distally puberulent abaxially; larger anthers 9.5–10 mm long ... 1. *T. carinatus*
- 1b. Upper leaf surfaces essentially flat, the elevated nerves on lower leaf surfaces moderately to sparingly covered only with lepidote hairs; hypanthia (at anthesis) 3(–3.5) mm long to the torus; calyx lobes beset with an inconspicuous blunt subapical tooth; petals glabrous abaxially; larger anthers 4.5 mm long ..... 2. *T. gordonii*

#### *Tessmannianthus carinatus* Almeda, sp. nov.

TYPE: Panama. Panamá: Cerro Jefe region, ca. 9°15'N, 79°30'W, forest near summit, ca. 850 m, 24 Aug. 1986 (fl), *McPherson 9980* (holotype, CAS; isotypes, MO, PMA, not seen).  
Figure 1.

Ramuli primum quadrangulati demum teretes sicut folia novella foliorum subtus venae primariae inflorescentiaque dense vel modice pilis pinoideis ca. 0.5 mm longis et squamis lepidotis modice intermixtis. Petioli 0.5–1.4 cm longi; lamina 4.3–8.5 × 1.7–4.4 cm elliptica vel elliptico-ovata apice breviter (2–3 mm) gradatimque acuminato basi obtusa, 5-nervata (pari inframarginali tenui neglecto) nervis secundariis ca. 2.5–4 mm inter se distantibus subtus elevatis, coriacea et integra. Panicula 3–5.5 cm longa multiflora; flores 5(–6)-meri, pedicellis (ad anthesim) 3–

6 mm longis. Hypanthium (ad torum) 7–8 mm longum; calycis tubus 1.5 mm longus, lobis 2.5 × 3 mm late ovatis, dentibus exterioribus callosis acutis ca. 1 mm eminentibus. Petala 7–7.5 × 5.5–6 mm obovato-suborbicularia ca. 2–2.5 mm unguiculata extus apicaliter modice puberula. Stamina dimorphica glabra; antherae ad basim in staminibus maioribus et staminibus minoribus biauriculatae. Ovarium triloculare et ca. ⅓ inferum. Fructus maturus ignotus.

Trees to 11 m tall. Older cauline internodes terete and glabrous; the subquadrangular distal branchlets, vegetative buds, and inflorescences moderately to densely covered with a mixture of dark brown shaggy-dendritic and irregularly-shaped lepidote hairs. Leaves of a pair essentially equal in size; petioles 0.5–1.4 cm long; blades coriaceous, 4.3–8.5 cm long, 1.7–4.4 cm wide, elliptic to elliptic-ovate, apex gradually acuminate with a short acumen (2–3 mm), this obtuse to broadly rounded and curved downward, base obtuse, margin entire and revolute distally, 5-nerved abaxially, the outermost pair of primaries often inconspicuous and concealed by the revolute margins when dry, the transverse secondaries elevated like the primaries and spaced 2.5–4 mm apart at the widest portion of the blade, glabrous and sulcate above at maturity, covered with a mixture of dendritic and lepidote hairs on the elevated primaries below, otherwise moderately beset only with lepidote hairs. Inflorescence a terminal multiflowered panicle 3–5.5 cm long; bracteoles paired, early caducous, linear-oblong to narrowly obovate, 1.5–5 mm long, 0.5–2 mm wide, margin entire, glabrate above, moderately lepidote below. Pedicels 3–6 mm long, densely lepidote. Hypanthia (at anthesis) cylindrical, 7–8 mm long to the torus, moderately to copiously lepidote. Calyx tube 1.5 mm long on flowering hypanthia; calyx lobes reportedly white, ovate but appearing deltoid abaxially because of the carinate clawlike tooth (ca. 1 mm high) at the incurved summit, 2.5 mm long (excluding tooth) and 3 mm wide basally between sinuses, the margins entire. Petals 5(–6), reportedly pale pink, 7–7.5 mm long, 5.5–6 mm wide, obovate-suborbicular, rounded apically, abruptly tapering to a basal claw 2–2.5 mm long, glabrous adaxially but puberulent distally on the abaxial surface, the margin retrorsely erose-ciliolate. Stamens 10(–12), strongly dimorphic with larger stamens inserted on the torus opposite the calyx lobes and smaller ones inserted opposite the petals; filaments somewhat declinate, complanate and glabrous; anthers yellow and 2-celled. Larger stamens: filaments 6.5–7 mm long; anthers geniculate at the filament insertion, 9.5–10 mm long and 0.5 mm wide, subulate, ventrally arcuate and channeled between the thecae, opening by 2 ven-

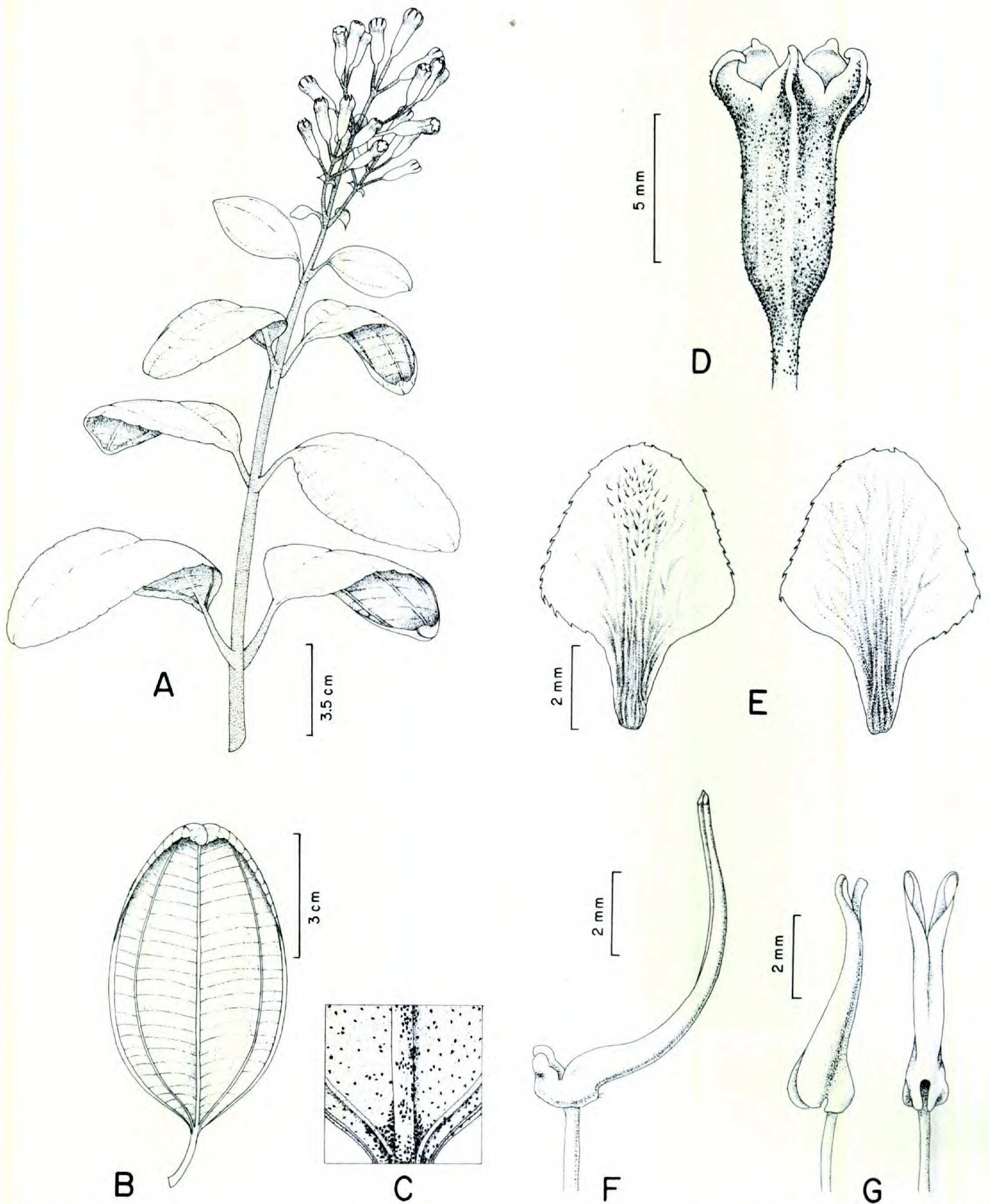


FIGURE 1. *Tessmannianthus carinatus*.—A. Habit.—B. Representative leaf.—C. Base of leaf blade (abaxial surface) with enlarged lepidote hairs.—D. Hypanthium (at anthesis); petals, stamens, and style removed.—E. Petals, abaxial surface (left), adaxial surface (right).—F. Larger stamens (lateral view).—G. Smaller stamens, lateral view (left), dorsal view (right). Drawn by Ellen del Valle from the holotype.

trally inclined confluent pores; connective thickened dorsally and prolonged at the minutely puberulent base into a ventrally upturned biauriculate appendage, with each lobe 1–1.5 mm long and 0.5 mm wide. Smaller stamens; filaments 5.5–6 mm long; anthers 6 mm long and 0.5 mm wide basally,

linear-oblong, erect to somewhat incurved distally with the 2 thecae of each anther diverging from one another, each theca opening by a dorsally inclined pore; connective thickened dorsally and prolonged at the base just above the filament insertion into a deflexed, deeply bifid appendage 0.5

mm long having each lobe caudiform in dorsal and ventral view. Ovary (at anthesis) ca.  $\frac{2}{3}$  inferior, 3-celled, oblong, glabrous at the apex. Style 7.5–8 mm long, 0.5–1 mm wide, glabrous, somewhat declinate and slightly incurved distally; stigma round to subtruncate. Mature capsule and seeds not seen.

*Distribution.* Known only from the summit area of Cerro Jefe in central Panama at about 850 m, where the new species is evidently an uncommon member of the low cloud forest vegetation. It grows with but appears to be greatly outnumbered by the vegetatively similar Cerro Jefe race of *Conostegia montana* (Sw.) D. Don ex DC.

*Tessmannianthus carinatus* differs from other members of the genus in characters of the foliage, indument, and calyx lobes. The leaves of this species are leathery and sulcate, with a rounded terminal acumen that is turned downward. The indument on young branches, inflorescences, and the elevated primary nerves on lower leaf surfaces consists of a mixture of appressed lepidote hairs and spreading dendritic or pinoid hairs. The former hair type is found in all other members of the genus; the latter is unique to *T. carinatus*. The specific epithet draws attention to the distinctive calyx morphology. Each lobe is beset with a carinate abaxial keel that forms an apically incurved clawlike tooth (Fig. 1D).

*Tessmannianthus carinatus* appears to be without close relatives. Its leathery leaves are vaguely reminiscent of *T. heterostemon*, which differs markedly in having larger (9–20.5 × 6.4–13.5 cm) apically rounded obovate blades, shorter hypanthia (3–4 mm) with minute caducous exterior calyx teeth, and elliptic-oblong, papillate petals.

***Tessmannianthus gordonii*** Almeda, sp. nov.

TYPE: Panama. Chiriquí: Fortuna Dam watershed, above Río Hornito, 08°45'N, 82°15'W, 1,250 m, 1 July 1987 (fl), *McPherson 11161* (holotype, CAS; isotypes, AAU, BM, COL, CR, DUKE, EAP, F, K, LE, MEXU, MO, NY, P, PMA, QCA, TEX, U, US, VEN, not seen). Figure 2.

Ramuli primum quadrangulati demum teretes sicut petioli foliorum subtus venae primariae inflorescentiaque squamis lepidotis demum caducis sparsiuscule induti. Petioli 0.6–1.3 cm longi; lamina 4.4–6.8 × 2.1–2.9 cm elliptica apice acuminato, basi acuta vel obtusa, 3–5-nervata vel 3–5-plinervata (pari tenui marginali neglecto) firme membranacea et integra. Panicula 2.5–3.5 cm longa multiflora; flores 5-meri, pedicellis (ad anthesim) 2–3.5 mm longis. Hypanthium (ad torum) 3(–3.5) mm longum; calycis tubus ca. 0.5 mm longus, lobis 1 × 2 mm ovatis, dentibus exterioribus crassis 0.5 mm eminentibus.

Petala glabra 4–4.5 × 2–2.5 mm elliptico-oblonga ca. 0.5–1 mm unguiculata. Stamina dimorphica glabra; antherae ad basim in staminibus maioribus et staminibus minoribus distincte biappendiculatae. Ovarium triloculare; capsula ca. 5–6 mm longa; semina numerosa 2–2.5 mm longa anguste pyramidata.

Trees 9–16 m tall. Older cauline internodes terete and glabrous; the quadrangular distal branchlets, lower leaf surfaces, and inflorescences beset with a moderate covering of caducous lepidote hairs. Leaves of a pair essentially equal in size; petioles 0.6–1.3 cm long; blades firmly membranaceous, 4.4–6.8 cm long, 2.1–2.9 cm wide, elliptic, apex acuminate, base acute to obtuse, margin entire, 3–5-nerved or 3–5-plinerved abaxially with the innermost pair of primary nerves elevated and diverging from the median nerve in opposite fashion about 2–4 mm above the blade base, the outermost pair of primaries mostly depressed and inconspicuous, essentially glabrous above at maturity, sparingly to moderately beset with brown lepidote hairs below. Inflorescence a terminal multiflowered panicle 2.5–3.5 cm long with ultimate branchlets terminating in umbelliform clusters; bracteoles paired, sessile, persistent to tardily deciduous on the infructescence, ovate to oblong-ovate, rounded apically, 0.5–3 mm long, 0.5–2 mm wide, margin entire, glabrous on the concave upper surface, moderately to copiously lepidote to glabrate on the lower surface. Pedicels 2–3.5 mm long, sparingly lepidote to glabrate. Hypanthia (at anthesis) subcylindric to narrowly campanulate, 3(–3.5) mm long to the torus, glabrous or sparingly lepidote toward the base but typically glabrous at maturity. Calyx tube ca. 0.5 mm long on fruiting hypanthia; calyx lobes broadly ovate but appearing bluntly deltoid because of the terminal tooth (to 0.5 mm long) on the glabrous abaxial surface, 1 mm long, 2 mm wide basally between sinuses, the margins entire and somewhat incurved apically. Petals 5, glabrous, reportedly pink-white, elliptic-oblong to narrowly obovate, rounded to shallowly and irregularly lobed apically, gradually tapering to a short (0.5–1 mm) basal claw, 4–4.5 mm long, 2–2.5 mm wide, retrorsely erose-ciliolate. Stamens 10, strongly dimorphic with larger stamens inserted on the torus opposite the calyx lobes and smaller ones inserted opposite the petals; filaments somewhat declinate, complanate and glabrous; anthers yellow, 2-celled. Larger stamens: filaments 5 mm long; anthers geniculate at the filament insertion, 4.5 mm long, 0.5 mm wide, linear-oblong, arcuate and channeled ventrally between the thecae, opening by 2 ventrally inclined confluent pores; connective thickened dorsally and prolonged at the

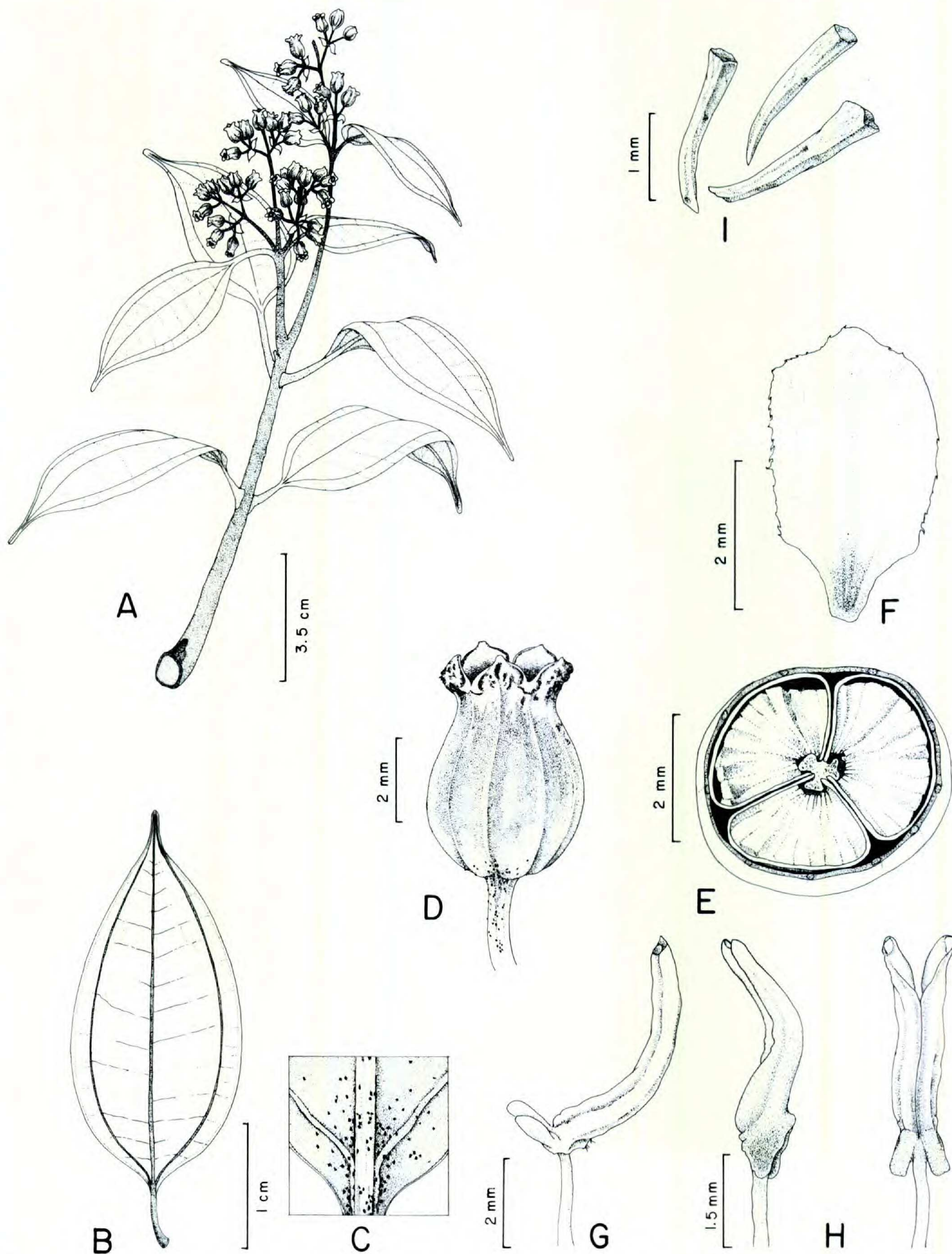


FIGURE 2. *Tessmannianthus gordonii*. —A. Habit. —B. Representative leaf (abaxial surface). —C. Base of leaf blade (abaxial surface) with enlarged lepidote hairs. —D. Hypanthium (in fruit). —E. Cross section of capsule and enveloping hypanthium. —F. Petal (abaxial surface). —G. Larger stamens (lateral view). —H. Smaller stamens, lateral view (left), dorsal view (right). —I. Seeds. Drawn by Ellen del Valle. (A–C, F–H from the holotype; D, E, I from *McPherson 9877*.)

minutely puberulent base into a ventrally upturned deeply bifid appendage, with each lobe 1 mm long and 0.5 mm wide. Smaller stamens: filaments 4–5 mm long; anthers 2.5–3 mm long, 0.5 mm wide

basally, linear-oblong, erect to somewhat incurved distally where the 2 thecae diverge from one another, each theca opening by a dorsally inclined pore; connective thickened dorsally and prolonged

basally into a deflexed biauriculate skirtlike appendage (0.5–0.75 mm long), with each of its lobes tail-like in ventral and dorsal view and obdeltoid in lateral view. Ovary (at anthesis) ca.  $\frac{1}{2}$  inferior, 3-celled, narrowly elliptic, glabrous apically. Style 5–6 mm long, 0.5 mm wide, glabrous, declinate and somewhat incurved distally; stigma rounded to subtruncate. Fruit a many-seeded loculicidal capsule ca. 5–6 mm long and 4.5–5 mm diam. Seeds narrowly pyramidate, cuneate and angulate, 2–2.5 mm long, white or beige, glabrous but vaguely papillate on the angles.

*Distribution.* Known only from montane forests of the Fortuna Dam watershed above Río Hornito at 1,100–1,250 m in Chiriquí Province, Panama.

*Additional specimen examined.* PANAMA. CHIRIQUÍ: vicinity of Fortuna Dam along trail near Río Hornito, ca. 8°45'N, 82°15'W. Forest ca. 1,100 m, 8 Aug. 1986 (fr), *McPherson 9877* (CAS).

In the size, shape, and indument of its leaves, *T. gordonii* most closely resembles *T. cenepensis*. The latter differs in the following characters: anther sacs of the larger stamens are linear-oblong and conspicuously retuse or bifurcate distally for about 0.5 mm; anther sacs of the smaller stamens are bifurcate for the distal two-thirds of their length and have connectives that are obscurely lobed but not prolonged into biauriculate appendages; the

ovary is puberulent; the petals are copiously furfuraceous-lepidote abaxially; and the hypanthia are markedly constricted below the torus into a tubular neck that shortens to a tight constriction on fruiting hypanthia. *Tessmannianthus cenepensis* also appears to differ in other modal tendencies. Its inflorescences are longer (5–8 cm) and more floriferous than those of *T. gordonii*, and its petals are broadly ovate and appear to lack a well-developed basal claw. The consistency of these latter differences will become apparent only when better flowering material is available for study.

This species is named for Gordon McPherson (1947– ), collector of the type and all other known Panamanian specimens of this genus. His many fine collections of trees, shrubs, and epiphytes have added a number of new and interesting species to the flora of Panama.

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